



An Energy Efficiency Workshop & Exposition
Kansas City, Missouri

Getting Started!

Assessing your Energy Profile

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Assessing your Energy Profile

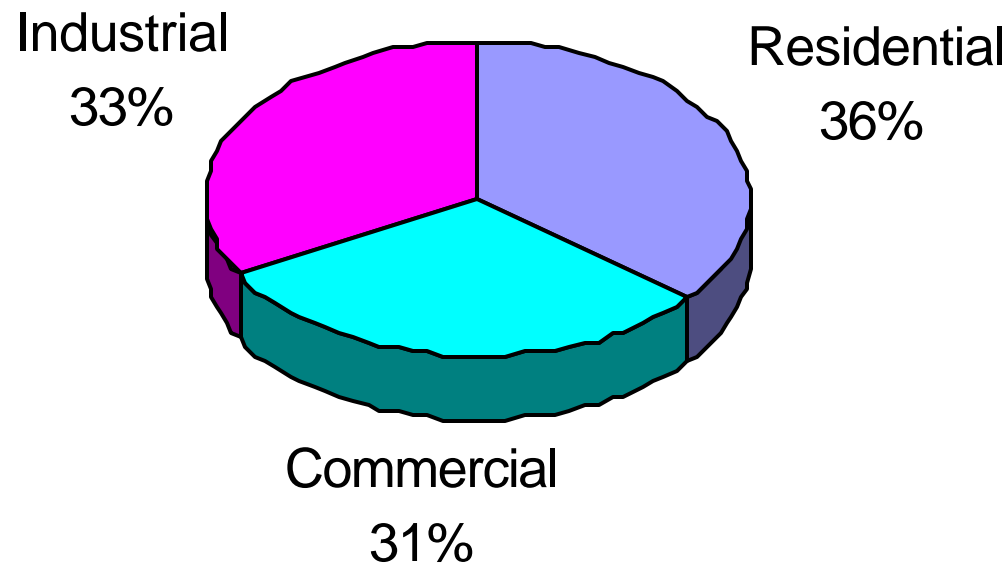
AGENDA

- **Energy Use and Costs**
 - **Acquiring, Accumulating and Tracking**
 - **Benchmarking**
 - **Identifying Opportunities**
- **Basic Energy Management**
 - **Life Cycle Costing**
 - **Project Applications**



Assessing your Energy Profile

Electric Consumption (1999) Total Consumption 3.27 billion mwh

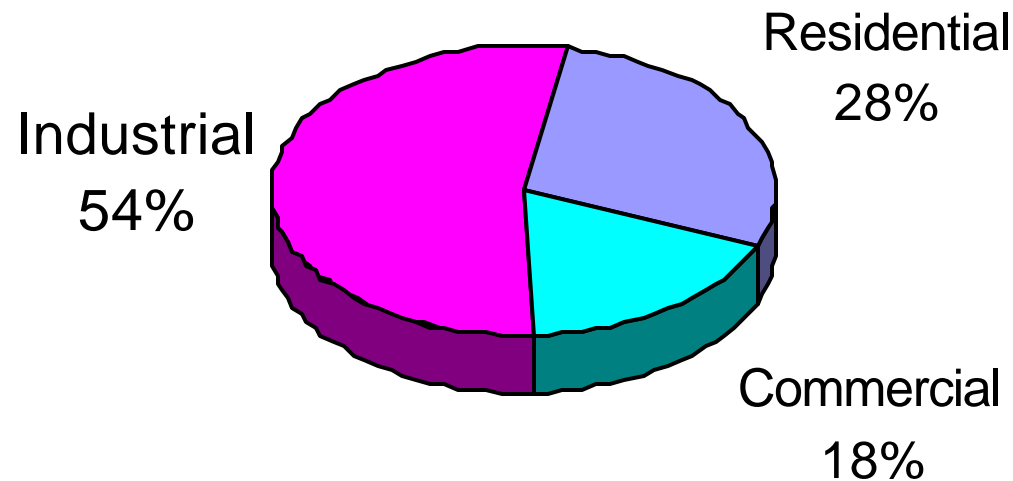




Assessing your Energy Profile

Natural Gas Consumption (1999)

Total Consumption 16.7 million mcf





Assessing your Energy Profile

Total Energy Market
(Retail Electric and Natural Gas)

\$250 Billion

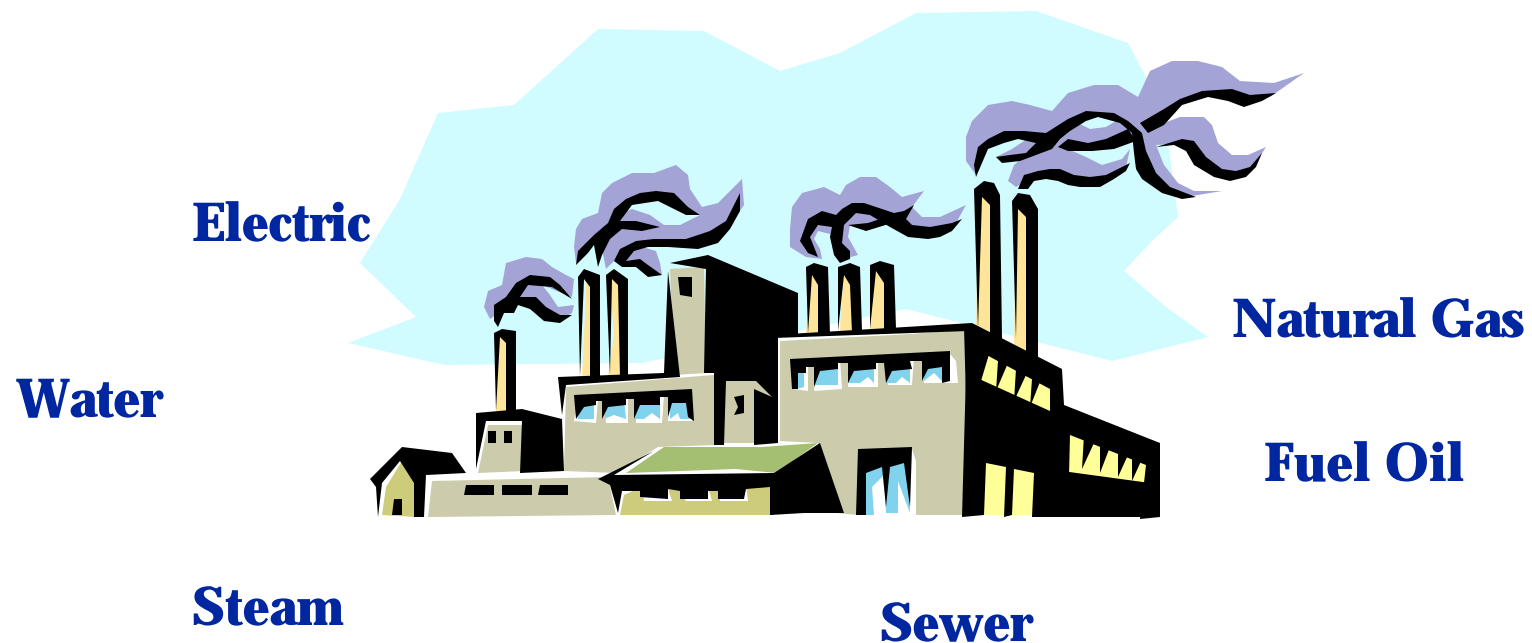
Commercial and Industrial

\$160 Billion



Acquiring, Accumulating and Tracking

All Utilities



◦ You can't manage what you can't measure



Acquiring, Accumulating and Tracking

Sources of Data

- **BILLS!**
- **Providers: utilities, fuel supplier, shipping**
- **Electronic (Internet)**
- **Meters**



Acquiring, Accumulating and Tracking

- What Information?
 - Consumption
 - Demand
 - Cost
- How Much Information?
 - AT LEAST 12 months
 - Monthly, daily, hourly



Acquiring, Accumulating and Tracking

- Additional Information?
 - Account number (account address)
 - Rate class and riders
 - Meter number (and type)
 - Contract Limits
 - KVA or Power Factor



Acquiring, Accumulating and Tracking

Cost Information

- Customer Charge (aka meter charge, billing charge)
- Consumption, use or commodity charges
- Demand charges
- On/off peak charges or credits
- Transportation or Transmission charges
- Distribution charges



Acquiring, Accumulating and Tracking

Cost Information

- Transition, Non-competitive asset, facilities charges (aka STRANDED COSTS)
- Balancing, nominating Fees
- Marketing Fees
- Losses (usually a %)
- Ancillary services
- Penalties
- Taxes



Acquiring, Accumulating and Tracking

Sample Bills



Acquiring, Accumulating and Tracking

Sample Spreadsheet



Benchmarking

- Pareto (80/20)
 - Focus resources
 - Biggest Bang
- Externally
 - National norms
 - Similar business or use
 - Best of Class

Sample BOMA data



Benchmarking

- Internally
 - Similar Operations
 - Regional variations in costs
 - Best of Class

Sample Dopaco data

- Types
 - unit usage (kwh/sq ft, btu/sq ft)
 - cost (\$/mcf, \$/sq ft)



Benchmarking

Resources

- o EIA!
- o FEMP
- o Energy Star/EPA
- o State Energy Offices
- o Trade Associations (BOMA, IAC's, Etc.)
- o Vendors

Samples from Market reports??



Benchmarking

Resources

- Utilities
 - Tariffs
 - Form 1
- Indexes
 - NYMEX
- ISO's



Benchmarking

Tariff Samples



Identifying Opportunities

Look for the Obvious

- o Mistakes!
- o Penalties
- o Late Payment Fees
- o Taxes
- o Closed Accounts



Identifying Opportunities

Look for Patterns

- Variations from the benchmark
- Seasonal or time of day
- Consistently increasing (or decreasing)

Sample Load profiles-seasonality



Identifying Opportunities

Understand your Operation, know what can be changed

- interruptibility
- time of day, week, seasonal
- alternate fuels
- accounting and payment
- Move?

Sample tariff differences for night service, interruptible



Identifying Opportunities

Understand your Base Costs

- READ the tariff and riders
- ASK the utility to explain the rates and alternatives
- TALK to your neighbors!
- MEET with industry and trade groups
- FORM 1



Identifying Opportunities

FORM 1



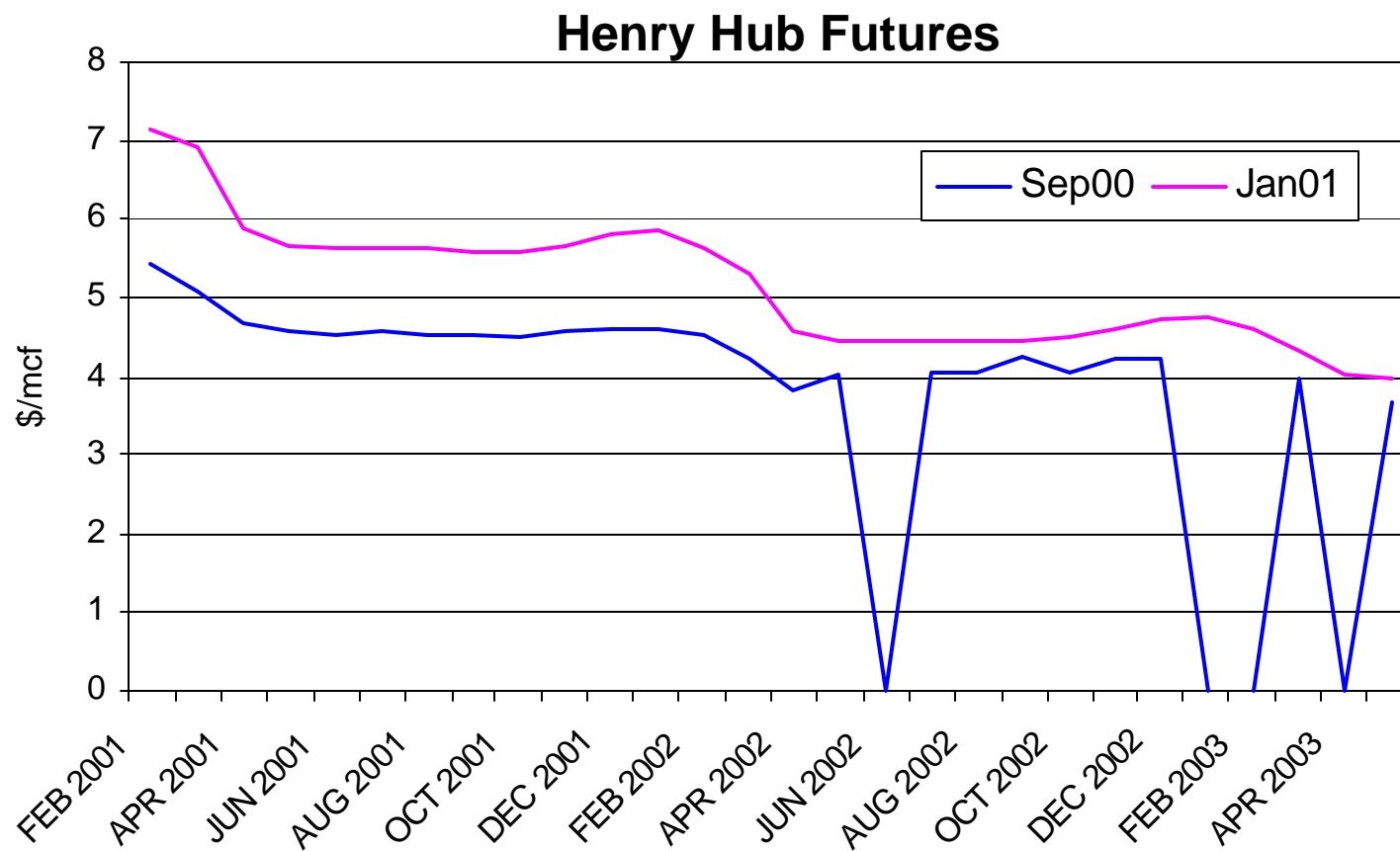
Identifying Opportunities

Shopping

- Know your price to compare (aka shopping credit, standard offer, stay home rate)
- Research the market
 - Where has it been, what is the trend?
 - What indexes apply?



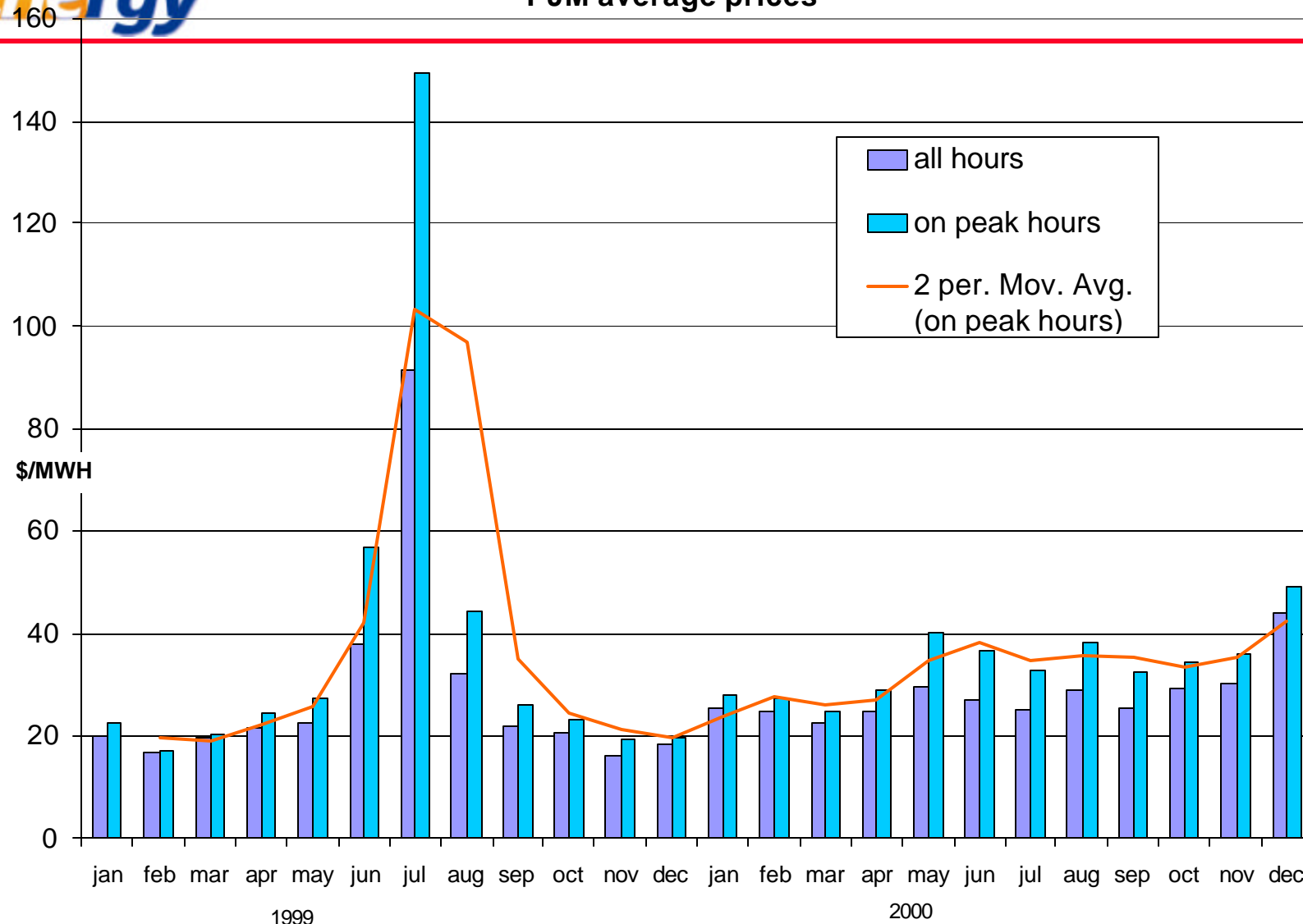
Identifying Opportunities





Identifying Opportunities

PJM average prices



June 3-6, 2001

www.energy2001.ee.doe.gov



Identifying Opportunities

- Load profile (load shifting)
- RR benchmark



Identifying Opportunities

Where to get help?

- Here!
- Vendors
- ESCO's
- Utilities



Basic Energy Management

Now that we have measurements, We can start to Manage.

- Project Applications
- Life Cycle Costing



Basic Energy Management

We will concentrate on Cost Management,
with Energy Conservation as a bonus.

- Project Applications
 - Identification
 - Qualification
 - Selection



Project Identification

- It's Time to Conduct an Audit.
In-house vs. Professional
- Identify Energy Consuming Equipment
 - Detailed Inventory
 - Operating Characteristics



Project Identification

- The Results of the Survey:
 - A Pie Chart of Energy Consuming Equipment,
 - An Approximation of the Utility Bills,
 - A Computer Model of the Facility's Energy Usage , and
 - A list of Opportunities for Cost Reduction.



Project Identification

- Six Major Areas for Savings:
 - Lighting
 - Heating and Air-Conditioning (HVAC)
 - Building Envelope
 - Equipment and Machines
 - Motors
 - Vehicles



Project Qualification

- Projects must meet Certain Economic Standards to be Implemented.
 - Payback
 - Return on Investment
 - Life Cycle Costing



Project Qualification

- Life Cycle Costing - Concept of Total Cost versus First Cost
- Includes:
 - First cost
 - Operating costs
 - Maintenance costs
 - Operating life
 - Salvage value



Project Qualification

- Software is available

- Modeling Software

http://www.eren.doe.gov/buildings/tools_directory/

- Building Life-Cycle Cost (BLCC) Programs

- Alternative Cost Analysis Software



Project Selection

- Develop a prioritized list of Projects
 - Cost
 - Ease of Implementation
 - Impact
 - Visibility



Life Cycle Accounting

- Remember to Track Progress
 - Record Bills on a Regular Basis
 - Watch for Anomalies
 - Track the Impact of Projects
 - Blow Your Horn



Life Cycle Accounting

- During New Construction & Renovations
 - Conduct Virtual Audits
 - Compare Alternatives
 - Predict Impacts
 - Make Sound Decisions



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Questions???

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